

**PLASMA IMMERSION ION IMPLANTATION APPARATUS INCLUDING A
PLASMA SOURCE HAVING LOW DISSOCIATION AND LOW MINIMUM PLASMA
VOLTAGE**

5

ABSTRACT

A method for ion planting a species into a surface layer of a workpiece in a chamber, the method includes placing the workpiece in a processing zone of the chamber bounded by a 10 chamber side wall and a chamber ceiling facing said workpiece and between a pair of ports of the chamber near generally opposite sides to the processing zone and connected together by a conduit external of the chamber. The method further includes introducing into the chamber a 15 process gas comprising the species to be implanted, and further generating from the process gas a plasma current and causing the plasma current to oscillate in a circulatory reentrant path comprising the conduit and the processing zone.

20